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THE FISH INDUSTRY OF THE KURIL ISLANDS

A. S. Bogdanov

Separating the Okhotsk Sea from the Pacific Ocean, the Kuriles chain is a natural barrier through which pass shoals of salmon going from the open portions of the Pacific into the streams of the Okhotsk coast for spawning. Cod, flounder, and herring are also important in the fish economy of the Kuriles.

Investigations have shown that the overwhelming mass of salmon go from the vicinity of the Aleutian and Komandorskiy Islands to Kamcharka. The part of the shoal that does not go into the river of the eastern shore of Kamchatka proceeds at some distance from the shoreline along the Kuriles chain and enters the Sea of Okhotsk through the straits between the northern Kuriles.

Not all straits, however, possess equal significance; the salmon prefer to go through the straits between the islands of Paramushiro and Okeotan (the third and fourth passages) although a lesser number proceed through the second and first passages.

Taking advantage of these known migrations, the Japanese fishermen attained a salmon catch in the northern Kuriles of from 100,000 fish in 1932 to 98,421,000 in 1939, i.e., from 1,500 centners to 1,300,000 centners.

Salmon were caught in the Kuriles not only by stationary seines but also by means of drag nets from motor schooners, which, based on the islands, fish in the open sea 40 - 50 miles off the chain. Drag fishing in the sea was so effective that the Japanese fishing legislation restricted the number of vessels engaged in drag fishing to 200, fearing a drop in the take both in the vicinity of the islands and in the concession regions off Kamchatka. For several years, drag fishing in the sea in the northern Kuriles gave a greater yield of fish than the fixed seines (see Table 2 appended).

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The composition of the take by species is different for the fixed seines and the drag nets. The species proportion in a typical year's catch is indicated below:

	Drag Fishing (%)	Seine Fishing (%)
Humpback salmon	49	90
Red salmon	12	2
Dog salmon	38	7
Kizhuch	<u>1</u>	<u>1</u>
	100	100

This variation is explained not so much by the different distribution of the fish between the open sea and the shore line as by the fact that the smaller fish -- the humpback salmon -- are difficult to catch in the large-mesh drag nets, while they are picked up by the smaller-meshed stationary seines.

Altogether, about 100 seine positions were exploited in the northern Kuriles. Fishing by fixed seines was conducted from the beginning of June to the end of August. The periods of fishing were:

	<u>Start</u>	<u>Peak</u>	<u>End</u>
Dog salmon	5 Jun	1 - 10 Jul	5 Aug
Humpback	10 Jun	15 - 30 Jul	5 Aug
Red	10 Jun	12 - 20 Jul	5 Aug
Kizhuch	20 Jun	25 - 30 Jul	5 Aug

For the whole season, from 2,000 to 45,000 centners of fish are caught in one stationary seine, the average being a little more than 9,500 centners. A catch of 45,000 centners in one seine is of course exceptional. For comparison, we can point out that in the present schooling waters off Kamchatka the average catch in one seine is 4,000 centners.

The number of fixed seines and the average catch per seine for the years 1938 to 1944 are shown below:

<u>Year</u>	<u>No of Seines</u>	<u>Catch per Seine (centners)</u>
1938	55	9,718
1939	58	19,952
1940	56	2,402
1941	63	7,503
1942	50	6,530
1943	37	16,952
1944	7	14,238

Comparing the average catches per seine, I. I. Lagunov has drawn the following conclusions:

The best catches of red salmon are found "in the seines off the eastern coast of Shimushu and Paramushiro islands with a gradual decrease going from north to south. Catches are comparatively small at the island of Arado."

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The best catches of dog salmon are found "in the seines on the eastern coast of the island of Shimushu. At Paramushiro Island, the catches gradually decline proceeding from the north to the south. Catches are satisfactory at Araido."

"Catches of humpback salmon are more or less equally distributed along the eastern coast of the chain, however there are decreases at the north and south ends of Paramushiro. Catches are small at Araido."

"Catches of kizhuch salmon are equal along the eastern coast of the chain; there are a few above-average locations at the mid-point on the eastern coast of Paramushiro."

About 200 boats participated yearly in open-sea fishing from 1938 through 1943. Motor schooners (with 80 - 100 horsepower engines) had up to 120 floating nets each. The length of a net was about 50 meters and the depth 4-5 meters. The nets were pulled on board with mechanical winches. Fishing was conducted from 1800 to 1900 and from 0400 to 0500. The average annual catch per boat from 1938 to 1943 amounted to 1,875 centners, the yearly distribution being as follows:

<u>Year</u>	<u>Centners</u>	<u>Year</u>	<u>Centners</u>
1938	2,624	1941	1,742
1939	1,702	1942	2,674
1940	1,732	1943	1,440

The schooners, bases and canneries were located in the second strait. Fishing was carried on primarily off the eastern coast of Shimushu and in the northern portions of the eastern coast of Paramushiro. The concentration of salmon along the eastern coast is to a marked degree higher than along the western, which can be explained by the pattern of the migration paths. Fishing is not conducted in the straits because of the strong currents.

Fishing by drift nets was begun a little earlier than by fixed seines. Periods for fishing by drift nets were as follows:

	<u>Start</u>	<u>Peak</u>	<u>End</u>
Red salmon	1 Jun	15 - 25 Jul	25 Aug
Dog salmon	25 May	10 - 20 Jul	25 Aug
Humpback	20 Jun	15 - 25 Jul	25 Aug
Kizhuch	20 Jun	25 Jul - 5 Aug	25 Aug

Codfish follows salmon in commercial significance in the fish industry of the Kuriles. Catches of cod in past years have been satisfactorily stable and have amounted to:

<u>Year</u>	<u>No of Boats</u>	<u>Catch (centners)</u>
1938	90	133.2
1939	80	91.0
1940	80	133.2
1941	60	133.2
1942	45	116.5
1943	61	137.0

The cod was caught by hooks and seines, less often by trawls and hand lines. The average catch for one boat amounted to about 2,000 centners. The average weight of cod used for commercial purposes was 3.5 - 3.75 kilograms. It is obvious that the reserves of cod in the Kuril Islands were not

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fully exploited by the industry because of the lack of labor force and the use of most of the available equipment for salmon fishing.

Flounder fishing, which in the northern Kuriles yielded 12,000 centners in 1942 and 37,000 in 1943, was insufficiently developed for the very same reason. The average seasonal catch of flounder per boat amounted to 2,000 centners, and the average weight of the flounder 0.4 - 0.5 kilograms.

Large numbers of herring have been repeatedly observed in the northern Kuriles, but the Japanese herring industry was concentrated on South Sakhalin and was not developed in the Kuriles. From 1933 through 1942 not more than 3,000 centners of herring per year were taken. Fishing was conducted by drift-nets from motor boats, primarily in the coastal waters of Shimushu.

In addition to fish, crabs, sea mammals, and seaweed have been taken in the northern Kuriles region. Fifteen motor boats were employed in crab fishing in 1938 - 1940. Fishing was carried on from 10 April through 10 May and from 20 August through 30 September. The take was processed in coastal canneries, producing 45,000 - 80,000 tins of crab preserves.

Whaling was conducted from shore bases. In 1945, 150 whales were brought in by two whaleboats in a short period.

Pinnipeds and long-eared seals possess some commercial significance.

The shoal waters surrounding the islands are very rich in various types of seaweeds. These are used for sea cabbage as a food product and for the production of iodine.

A special plant was constructed at Suribachi, designed to produce 70 tons of crystalline iodine a year, but this output was never attained because of labor difficulties. The seaweed was collected by hand and this proved a labor-consuming method.

The salmon catch was preserved by various methods. The majority was canned, and only a little was sent out fresh-frozen.

The following figures show the utilization of the salmon catch in 1943 (in percent):

Frozen	0.2
Canned preserves	10.3
Dried	8.8
Kairyo	31.9
Barrelled	43.4
Pressed fresh	3.2
Given to laborers and workers	0.3
Payment of premiums [sic]	1.9

Codfish were preserved by drying; meal fodder and fertilizers were made from the heads and entrails.

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The processing base was made up of several canneries of which only two were saved in their entirety: one five-line plant at Kashiobara on Paramushiro and one two-line plant at Nagasana on Shimushu. The remaining canneries were destroyed. One refrigerator of 300 tons capacity was saved at Kashiobara, but the refrigerator at Suribachi was destroyed.

The southern Kuriles have much smaller commercial significance than the northern. Salmon, cod, crabs, and seaweed make up the basic industry. In the southern Kuriles about 100,000-150,000 centners of fish were taken in a year and the whole industry was run on a much more haphazard basis than in the northern islands.

Table 1. Salmon Catch in Northern Kuriles
(in 1,000's of fish)

Year	Red	Dog	Humpback	Kizhuch	Total
1932	20	10	70	--	100
1933	900	2,000	3,000	--	5,900
1934	3,000	4,000	17,000	350	24,350
1935	950	6,000	38,000	840	45,790
1936	3,100	16,000	31,000	2,500	52,600
1937	4,455	14,565	68,909	1,708	89,637
1938	5,283	15,214	46,812	1,234	68,512
1939	3,507	11,718	82,265	792	98,471
1940	2,106	10,337	15,870	326	28,639
1941	1,876	5,569	46,052	311	57,908
1942	3,343	14,213	39,935	553	54,148
1943	4,350	5,292	60,609	395	70,646
1944	1,380	3,011	8,716	139	13,246
1945	234	140	1,020	38	1,432

Table 2. Breakdown of Northern Kuriles Salmon Catch by Type of Fishing

Year	Type of Fishing	Catch (in ,000's of Fish)				Total	Percent
		Red	Dog	Humpback	Kizhuch		
1938	Seine	1,128.2	4,005.1	36,416.2	211.1	41,760.6	60.9
	Drag	4,154.4	11,209.2	10,365.6	1,023.0	26,751.6	39.1
	Total	5,282.6	15,214.3	46,781.2	1,234.1	68,512.2	100.0
1939	Seine	436.5	3,868.3	77,044.2	151.2	81,500.2	82.9
	Drag	3,070.2	7,850.0	5,221.2	641.0	16,782.4	17.1
	Total	3,506.7	11,718.3	82,265.4	792.2	98,282.6	100.0
1940	Seine	194.5	2,202.9	3,218.0	27.9	10,643.3	37.2
	Drag	1,912.0	8,134.2	7,652.2	298.6	17,997.0	62.8
	Total	2,106.5	10,337.1	15,870.2	326.5	26,640.3	100.0

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<u>Year</u>	<u>Type of Fishing</u>	<u>Catch</u> (in 1,000's of Fish)					
		<u>Red</u>	<u>Dog</u>	<u>Humpback</u>	<u>Kizhuch</u>	<u>Total</u>	<u>Percent</u>
1941	Seine	182.6	2,696.5	35,880.0	65.6	38,824.7	67.0
	Drag	1,793.4	6,872.4	10,172.6	245.0	19,083.4	33.0
	Total	1,976.0	9,568.9	46,052.6	310.6	57,908.1	100.0
1942	Seine	701.1	3,136.7	21,198.8	170.8	25,207.4	46.6
	Drag	2,744.0	11,076.4	14,736.0	382.2	28,938.6	53.4
	Total	3,445.1	14,213.1	35,934.8	553.0	54,146.0	100.0
1943	Seine	289.7	928.2	51,962.8	54.0	53,234.7	75.4
	Drag	4,060.0	4,364.0	8,646.0	341.4	17,411.4	24.6
	Total	4,349.7	5,292.2	60,608.8	395.4	70,646.1	100.0

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